"Deal with it"

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"Deal with it": How coping with e-service innovation affects the customer experience

Robert Ciuchita[a,*], Dominik Mahr[b], Gaby Odekerken-Schröder[c]

[a] Department of Marketing, CERS Centre for Relationship Marketing and Service Management, Hanken School of Economics, Arkadiankatu 22, 00100 Helsinki, Finland
[b] Department of Marketing & Supply Chain Management, Service Science Factory, School of Business and Economics, Maastricht University, Tongersestraat 53, 6211 LM Maastricht, the Netherlands
[c] Department of Marketing & Supply Chain Management, School of Business and Economics, Maastricht University, Tongersestraat 53, 6211 LM Maastricht, the Netherlands

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ABSTRACT

E-service customers have myriad alternatives, so they can easily reduce their use of an e-service or switch to competitors. To enhance existing customers' experiences and convince them to persist in their usage, companies often introduce new versions of e-services. However, the changes resulting from such incremental innovations can be effortful for customers to learn and potentially even ruin their experiences. If e-service providers want to avoid losing existing customers, they must understand how customers deal with the changes introduced by incremental innovations and the resulting impacts on the customer experience, with both the innovation and the e-service in general. To address these research questions, the current study proposes a conceptual model based on service innovation, appraisal and coping, and customer experience theories and empirically tests it with data from two quantitative studies. The results show that incremental changes in existing e-services affect the cumulative customer experience, but firms introducing such innovations can encourage certain coping strategies (e.g., problem-focused) to leverage different dimensions of the encounter experience (e.g., usefulness of the new version, pleasure in using it).

1. Introduction

Pure e-services are nonphysical, technology-enabled, Internet-connected, and highly interactive (Cho & Menor, 2010; Morgan-Thomas & Veloutsou, 2013). Empowered by unprecedented information and communication technology developments, customer-oriented e-services are developing rapidly (Larivière et al., 2017). For example, in four e-service categories (online dating, fitness tracking, online event tickets, and online food delivery), Statista (2018) estimates worldwide revenues increasing by 11.3%, to US$226 billion, between 2017 and 2022. In this rapidly evolving competitive landscape, both technology and customer expectations change fast, and retaining existing customers is difficult because competitive offers abound, while switching costs are relatively low (Chea & Luo, 2008; Larivière et al., 2017). Yet the success of e-services requires fostering repeat interactions with existing customers by delivering superior customer experiences (Hoffman & Novak, 2017; Morgan-Thomas & Veloutsou, 2013).

Introducing incremental innovation is one of the most prevalent and persistent strategies for e-service providers to differentiate themselves from and outperform competitors (Huang, Henfridsson, Liu, & Newell, 2017). An incremental e-service innovation is a new version of an e-service that customers already use (Cho & Menor, 2010); the new version has common elements with the previous version but also induces some change (e.g., new designs, features) meant to improve customers' experiences (Barrett, Davidson, Prabhu, & Vargo, 2015). E-service providers anticipate that new e-service versions will improve existing customers' experiences, but that outcome is not guaranteed from customers' perspective (Kranzbühler, Kleijnen, Morgan, & Teerling, 2018). Existing customers already have devoted efforts to learn how to use previous versions of an e-service, and a new version inherently announces some degree of noticeable change (Snyder, Witell, Gustafsson, Fombelle, & Kristensson, 2016). If existing customers want to continue using the e-service, they must devote additional effort to learning about the change (Hong, Thong, Chasalow, & Dhillon, 2011), and if doing so is too difficult, they eventually might reduce their e-service usage or stop using it altogether (Fleischmann, Amirpur,

* Corresponding author.
E-mail addresses: robert.ciuchita@hanken.fi (R. Ciuchita), d.mahr@maastrichtuniversity.nl (D. Mahr), g.odekerken@maastrichtuniversity.nl (G. Odekerken-Schröder).

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Grupp, Benlian, & Hess, 2016). The e-service provider thus loses an important asset, because existing customers offer greater customer lifetime value (Prins & Verhoef, 2007) and are often less costly to retain than new customers are to acquire (Chea & Luo, 2008). Therefore, it is vital for e-service providers to understand (1) how existing customers deal with the change brought about by incremental innovations and (2) how that effort influences customers' perceptions of the new e-service version in the short run (i.e., encounter experience) and their e-service relationship in the long run (i.e., cumulative experience).

To address these research questions, the current study integrates two theoretical perspectives, against a backdrop of incremental e-service innovation. First, to explain how customers deal with the change brought about by an external event (i.e., introduction of a new version of an e-service they already use), we draw on established socio-psychology theory pertaining to appraisal and coping (Lazarus & Folkman, 1984). Customers might appraise a change as something to pursue (i.e., positive) or something to avoid (i.e., negative) and cope with it by employing strategies that enable them to address it directly (i.e., problem-focused coping) or to regulate the emotions stemming from the change (i.e., emotion-focused coping) (Duhachek & Iacobucci, 2005; Peacock & Wong, 1990). Second, we integrate an emerging theory of the customer experience (Kranzbühler et al., 2018) that posits that each discrete technology-enabled interaction of a customer with a service (i.e., service encounter) results in an *encounter* experience (Bolton et al., 2018). The collection of encounter experiences then shapes the *cumulative* experience (Hoffman & Novak, 2017; Patrício, Fisk, Falcão e Cunha, & Constantine, 2011). However, some encounter experiences, such as those resulting from the introduction of an incremental innovation to e-services that customers are already using, can be critical (so-called moments of truth), such that they affect the cumulative experience substantially (Lemon & Verhoef, 2016; Voorhees et al., 2017).

Drawing on these theoretical perspectives, we develop a conceptual model and formulate hypotheses regarding how existing e-service customers deal with the change introduced by incremental innovation through appraisal and coping and how their coping in turn influences the affective and cognitive facets of their encounter experience, which thereby affects their cumulative experience. We draw on data from two studies: Study 1 takes a retroactive focus and draws on data from existing customers of two e-services who had to think back to when new real-life versions were introduced. Study 2 instead has an active focus and is based on an experimental design with existing customers of an e-service who encounter a (fictitious) new version in real time. To test our hypotheses empirically, in both studies, we jointly estimate a system of multiple linear regression equations with seemingly unrelated regressions (Zellner, 1962).

Our research thus makes several contributions to service innovation (Snyder et al., 2016) and customer experience (Bolton et al., 2018) research. First, it introduces incremental innovation as a "make-or-break" encounter in the e-service customer journey. Acknowledging the potential for negative or positive outcomes of incremental innovation is important, because e-service providers must continue introducing innovations to stay competitive, but the introduction of incremental innovation becomes a moment of truth that risks harming existing customers' experiences (Voorhees et al., 2017). Second, the current research reveals how customers deal with changes induced by an incremental e-service innovation, namely, through appraisal and coping (Lazarus & Folkman, 1984). This contribution enriches literature on service innovation and customer experiences by both identifying customer coping strategies and specifying how they influence different dimensions of the encounter experience (affective or cognitive). This novel perspective extends appraisal and coping research that predominantly has dealt with negative consumption events and their emotional consequences (e.g., Duhachek, 2005; Duhachek, Agrawal, & Han, 2012). Third, a rich existing knowledge base details new service acceptance; the current research focuses instead on existing service continuance (Hong et al., 2011) to specify how an incremental service innovation can influence active, continuous relationships between existing customers and the service provider (Fleischmann et al., 2016). These insights further complement prior research that often adopts a firm or employee perspective and considers innovation usage that has been dictated by formal, hierarchical relationships (e.g., Ayyagari, Grover, & Purvis, 2011). But existing customers with the option to switch to competitors' e-services after the introduction of a new version must have other means to cope with the change, if they are to remain loyal. This contribution is especially crucial for existing e-services whose success depends on customers' continuous usage, more than on direct sales (Huang et al., 2017; Morgan-Thomas & Veloutsou, 2013).

2. Conceptual background

2.1. Innovation in e-services and the customer experience

Technology developments have condensed service life cycles and expanded customer expectations (Larivière et al., 2017). Introducing incremental innovations in e-services may enhance the customer experience by improving how customers interact with the service through new designs and features (Barrett et al., 2015). According to innovation literature (Fleischmann et al., 2016; Hong et al., 2011), the purpose of an incremental service innovation is to modify or extend an existing e-service that has been rolled out previously and is already in use. Thus, introducing an incremental service innovation is proactive (Hong et al., 2011): With a new version, the service provider induces some degree of change in how the e-service looks (i.e., its design) or what customers can do with it (i.e., its features).[1] This change is distinct and discernible by customers, who then must attempt to use the new version if they want to achieve the task for which they have been using the service (Fleischmann et al., 2016).

The e-service provider likely assumes that existing customers willingly embrace the change, because it is designed to address their needs and improve their experience (Hong et al., 2011), but that is not necessarily the case from customers' perspective (Kranzbühler et al., 2018). Customer experience theorizing (e.g., Hoffman & Novak, 2017; Patrício et al., 2011; Voorhees et al., 2017) suggests distinguishing between the discrete, encounter experience level (i.e., how the customer experiences the specific introduction of an incremental service innovation) and the continuous, cumulative experience level (i.e., how the customer experiences the relationship with the service provider in general). When a provider introduces a new version of an e-service that customers already use, the change might improve, but also might unintentionally diminish, the customer experience. Dealing with the constantly evolving e-service requires effort by customers, and additional efforts have affective and cognitive consequences (McColl-Kennedy, Zaki, Lemon, Urmetzer, & Neely, 2019; Snyder et al., 2016). Therefore, the introduction of an incremental service innovation is a critical service encounter initiated by the e-service provider that can affect the customer experience positively or negatively (Larivière et al., 2017). According to this customer-centric perspective on customer experience (Hoffman & Novak, 2017), the change introduced by incremental service innovation and the efforts customers make to deal with it likely affect the encounter experience, which may influence their cumulative experience.

2.2. Dealing with the change introduced by incremental service innovation

To explain how customers deal with the change introduced by the innovation of an existing e-service, this study draws from the social

[1] A new version of an e-service that is reactive, in that it only corrects problems (e.g., bug fixes) or changes software properties not directly related to its core functionality (e.g., maintenance patches), is not an incremental service innovation (Fleischmann et al., 2016; Hong et al., 2011).

psychology theory of appraisal and coping (Lazarus & Folkman, 1984). Also referred to as the transactional model of appraisal and coping, it explains how people adapt to changes in their environment (Duhachek, 2008). Specifically, any change—defined as an objective, external event with clear origins in time (e.g., introduction of a new version of an e-service)—can create disequilibrium (e.g., how the person experiences the encounter and the service in general) that the person must regulate, through appraisal and coping (Lazarus & Folkman, 1984). Extant research in business and management predominantly employs appraisal and coping theory to understand how customers deal with inherently negative encounters (e.g., guilt and shame associated with alcohol consumption; Duhachek et al., 2012).

2.2.1. Appraisal of the change

When faced with change due to the introduction of innovation in an e-service, customers first must determine whether the change is primarily threatening or challenging (Lazarus & Folkman, 1984). Threat appraisal is usually regarded as negative, because it arises in response to changes that produce excessive or undesirable constraints, demands, or losses; challenge appraisal instead is usually regarded as positive, in that it results from changes that provide customers with opportunities to attain something they desire or make gains (Duhachek, 2008).

The introduction of innovation in an e-service is an encounter that prompts customers to anticipate changes in how they interact with that service, which can affect their encounter experience (Snyder et al., 2016). Customers evaluate the anticipated change according to how it affects their resource investments or the extent to which it taxes their adaptive resources (Barrett et al., 2015). If their appraisal primarily indicates a threat (i.e., loss), the change likely does not warrant the resource investment; if their appraisal primarily implies a challenge (i.e., gain), it justifies that resource investment (Lazarus & Folkman, 1984). However, customers of an e-service are already part of the customer base, so if they want to continue using the service, they must find a way to cope with the anticipated change (Fleischmann et al., 2016).

2.2.2. Coping with the change

The fundamental step that follows appraisal is determining how the change can be managed (Lazarus & Folkman, 1984). Coping involves constant cognitive, emotional, and/or behavioral efforts to deal with a change that has been appraised as taxing or exceeding available resources (Duhachek, 2008; Lazarus & Folkman, 1984), and these efforts combine in the form of coping strategies (Duhachek et al., 2012; Han, Duhachek, & Agrawal, 2016). In particular, in response to an incremental innovation in an e-service, customers need coping strategies to manage the adaptation demands prompted by the perceived change in their encounter experience (Lazarus & Folkman, 1984). Coping strategies are essential, because they provide situational means to address taxed or exceeded customer resources (Duhachek, 2008). Two general types of coping strategies emerge from appraisal and coping literature: emotion- and problem-focused (Duhachek, 2008; Lazarus & Folkman, 1984). The former refers to the emotional consequences of dealing with the change and regulating those emotions, whereas the latter refers to the potential actions a person can initiate in response to the change (Han et al., 2016).

2.3. Coping strategies during the encounter experience

Following the introduction of an incremental e-service innovation, customers seek to manage the situational demands created by that change; the more effort they put into coping, the more they confront the innovation and thus interact with it, with consequences that might enhance or detract from their encounter experience (Moeller, Ciuchita, Mahr, Odekerken-Schröder, & Fassnacht, 2013). Multiple customer experience dimensions (or elements) have been proposed (e.g., Hoffman & Novak, 2017; Lemon & Verhoef, 2016). In a recent review, Kranzbühler et al. (2018) identify affective, cognitive, and sensory dimensions as dominant in studies of the customer experience that take a customer perspective. The sensorial dimension usually relates to offline experiences (e.g., interacting with the servicescape in brick-and-mortar outlets; Keiningham et al., 2017), so in accordance with our focus on e-services (i.e., nonphysical, Internet-connected services with only an online presence; Cho & Menor, 2010; Hoffman & Novak, 2017), we focus on the cognitive (utilitarian) and affective (hedonic) dimensions (McColl-Kennedy et al., 2019; Morgan-Thomas & Veloutsou, 2013).

The cognitive dimension pertains to *goal attainment* (i.e., reflections on achieving usage goals with the incremental innovation) and *confirmation of expectations* (i.e., evaluation of task-related characteristics of the incremental innovation, such as functionality; Keiningham et al., 2017; Rose, Hair, & Clark, 2011). Goal attainment is embodied by self-efficacy, or customers' conviction that they can use the new version to perform the tasks for which they use the service (Van Beuningen, de Ruyter, & Wetzels, 2011). Confirmation of expectations involves usefulness, which captures customers' conviction that the new version can help them achieve more from using the service (Venkatesh & Davis, 2000).

The affective dimension of the encounter experience reflects *usage pleasure* (i.e., enjoyment of the incremental innovation; Morgan-Thomas & Veloutsou, 2013; Rose et al., 2011), embodied by intimacy, which captures customers' feelings of warmth, enjoyment, and happiness toward an e-service (Yim, Tse, & Chan, 2008). Intimacy is characterized by frequent, close, and cherished interactions (Bügel, Verhoef, & Buunk, 2011), which are essential for e-services.

2.4. Encounter and cumulative experiences

The cumulative customer experience comprises a retrospective assessment of all encounter experiences that contribute to the relationship with the service (Hoffman & Novak, 2017; Lemon & Verhoef, 2016). Critical encounters such as the introduction of an incremental service innovation can influence the cumulative experience substantially (Voorhees et al., 2017). Debate continues about how to measure the cumulative customer experience, but satisfaction measures generally serve as good proxies (Keiningham et al., 2017; Lemon & Verhoef, 2016). Ultimately, service providers introduce incremental innovations in e-services because they want to improve their users' experiences and deepen their relationships (Snyder et al., 2016). Relationship satisfaction, or the customer's satisfaction with the overall relationship with the service provider (DeWulf, Odekerken-Schröder, & Iacobucci, 2001), reflects the evolution of the customer experience over time. A recent meta-analysis affirms that relationship satisfaction is a significant determinant of customers' continued usage in online environments (Verma, Sharma, & Sheth, 2016).

3. Hypotheses development

Fig. 1 presents the proposed conceptual model, detailing how customers deal with the introduction of incremental e-service innovations. We anticipate that existing customers deal with the change brought about by a new version of an e-service because they want to continue using the e-service that has undergone the incremental service innovation.

3.1. Appraisal and coping strategies

When customers employ an emotion-focused coping strategy, they work to acknowledge and manage their resulting emotions (e.g., taking time to understand and express feelings); such efforts represent attempts to avoid loss (Duhachek et al., 2012). Threat appraisals emphasize negative consequences (loss or potential harm; Peacock & Wong, 1990), so if they appraise a change as threatening, customers likely have an emotional response, in an attempt to acknowledge how

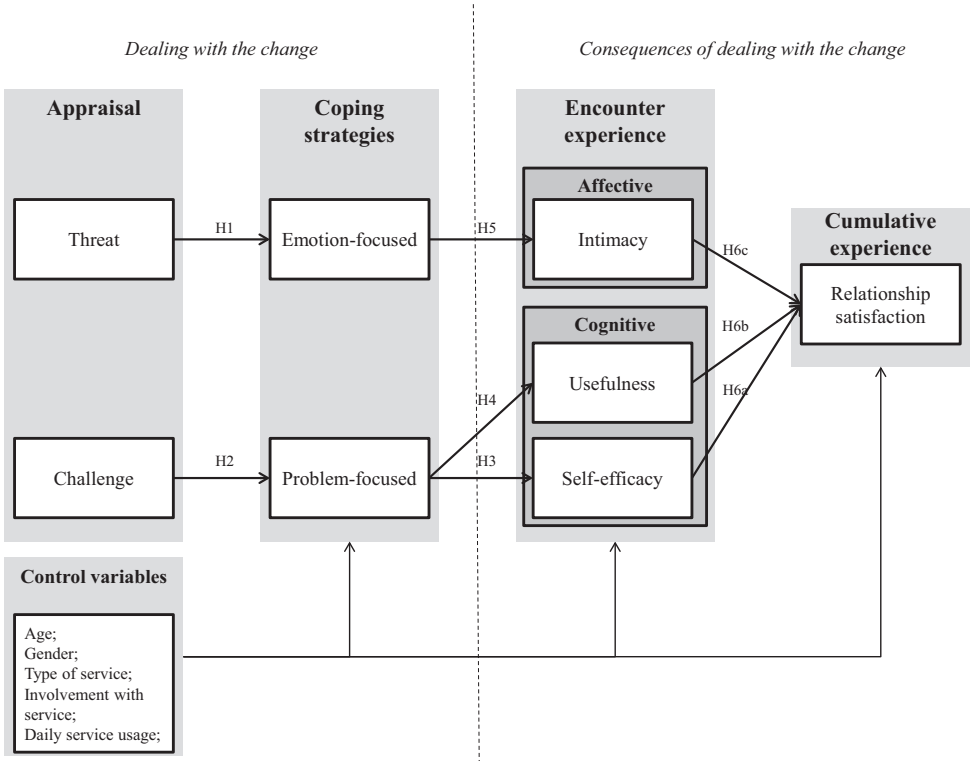

Fig. 1. Conceptual model and hypotheses of how customers deal with the change introduced by incremental e-service innovation and its consequences.

they feel (Duhachek, 2008). That is, they anticipate losses due to the change and seek to minimize them. Formally, when dealing with the change introduced by a new version of an e-service:

H1. Threat appraisals increase existing customers' reliance on emotion-focused coping.

When customers employ a problem-focused coping strategy, they instead make efforts to address the change directly or do something about it and thereby achieve a gain (Duhachek et al., 2012; Lazarus & Folkman, 1984). Challenge appraisals emphasize positive consequences (perceptions of gain or potential growth; Peacock & Wong, 1990). Therefore, when appraising a change as challenging, customers likely exhibit an action-oriented response (Duhachek, 2008), because they expect gains from dealing with the change and seek to maximize those gains. Formally, when dealing with the change introduced by a new version of an e-service:

H2. Challenge appraisals increase existing customers' reliance on problem-focused coping.

3.2. Problem-focused coping and cognitive encounter experience

3.2.1. Self-efficacy

When customers exhibit perceptions of self-efficacy, they are convinced that they can execute the behavior required to attain their goals successfully (Bandura, 1977; Lazarus & Folkman, 1984). Customers who employ a problem-focused coping strategy seek to address the appraised change directly through action-oriented efforts, including direct action to address the change (Duhachek et al., 2012; Han et al., 2016). Such action-oriented efforts require interaction (e.g., try the new version; Moeller et al., 2013). Through these frequent interactions, customers develop a sense of their own ability to use the e-service (Barrett et al., 2015). Formally, when dealing with the change introduced by a new version of an e-service:

H3. Employing problem-focused coping increases existing customers' perceptions of self-efficacy.

3.2.2. Usefulness

When customers perceive an e-service as useful, they sense that this e-service allows them to attain their goals through continued usage (Ayyagari et al., 2011; Venkatesh & Davis, 2000). Customers who employ a problem-focused coping strategy put more effort into action-oriented efforts to address the change directly. In the case of e-services, such efforts imply frequent interactions (Moeller et al., 2013). Through these interactions, customers come to understand the e-service's functionality and confirm their expectations about how the e-service can help them attain their usage goals (Keiningham et al., 2017). Formally, when dealing with the change introduced by a new version of an e-service:

H4. Employing problem-focused coping increases existing customers' perceptions of usefulness.

3.3. Emotion-focused coping and affective encounter experience

When customers perceive intimacy toward a service provider, they express emotional connections (e.g., closeness, bondedness) with that interaction partner (Bügel et al., 2011; Yim et al., 2008). Customers who employ an emotion-focused coping strategy put more effort into acknowledging and managing the emotions resulting from the appraised change. Their aim is to reduce the emotional impact of the appraised change by placing it in a broader context and thus perceiving the change as less unpleasant or consequential (Han et al., 2016). Such an emotional investment drives intimacy (Yim et al., 2008). Formally, when dealing with the change introduced by a new version of an e-service:

H5. Employing emotion-focused coping increases existing customers' perceptions of intimacy.

3.4. Encounter and cumulative experiences

When customers assess their relationship satisfaction with a service provider, they evaluate their cumulative satisfaction over the course of the relationship (DeWulf et al., 2001). Previous research suggests positive influences of goal attainment (self-efficacy; Van Beuningen et al., 2011), expectation (dis)confirmation (usefulness; Fleischmann et al., 2016), and usage enjoyment (intimacy; Bügel et al., 2011) on encounter-level satisfaction. We extend these findings to cumulative-level relationship satisfaction. Formally, when dealing with the change introduced by a new version of an e-service:

H6. Perceptions of (a) self-efficacy, (b) usefulness, and (c) intimacy increase existing customers' perceptions of relationship satisfaction.

4. Methodology

To test the hypotheses, we draw on data from two quantitative, complementary studies. Study 1 takes a *retroactive* focus and draws on data from existing customers of two real-life e-services who had to think back to when new versions were introduced. Study 2 has an *active* focus and is based on an experimental design with existing customers of an e-service who were introduced to a fictitious new version in real time. Study 1 captures how existing customers dealt with the change brought about by incremental e-service innovation after the fact. Study 2 depicts existing customers dealing with the change as it happens.

4.1. Study 1: survey

The first study tests the conceptual model in real-life contexts, involving new versions of two existing services: Facebook's introduction of its Timeline version and Blackboard's introduction of the Blackboard 9 version. These contexts are appropriate study settings for several reasons. First, both new versions reflect the proposed conceptualization of incremental service innovation, in that they sought to improve customers' experiences by introducing changes (e.g., new designs, features) that were noticeable by customers. Second, both services introduced the new versions at roughly the same time, so customers who were already using both services were exposed to them simultaneously. Third, each new version became the default soon after its introduction, such that customers who wanted to continue using Facebook or Blackboard had to use the new versions. Fourth, the goal was to capture different service settings, and whereas Facebook is a more hedonic service, Blackboard is a less hedonic one.

4.1.1. Participants and procedure

Two hundred ninety-nine customers were recruited from a western European university to take part in the study, for course credit. Participants had an average age of 20.83 years (SD = 1.41), and 49% were women. The sample was deemed appropriate because university students are typical Blackboard customers, and their demographics and usage statistics reflect typical profiles of Facebook customers in the period after the Timeline introduction (Pew Research Center, 2015). Participants were randomly assigned to one of two groups: Facebook Timeline (n = 147) or Blackboard 9 (n = 152). Participants in each group were reminded of the recently introduced new version and then answered questions about their appraisal of this incremental service innovation, the coping strategies they used to deal with it, and their encounter and cumulative experiences with the service. On average, participants were familiar (1 = *Not at all familiar* to 7 = *Very familiar*) with the e-service to which they had been randomly assigned (Facebook or Blackboard; M = 6.24, SD = 0.82), as well as the newly introduced version of that service (Facebook Timeline or Blackboard 9; M = 5.24, SD = 1.04). All the constructs, their sources, and their reliability scores, as well as the measurement items, scale anchors, and factor loadings, are in the Appendix. Table 1 summarizes the descriptive statistics and correlations.

4.1.2. Psychometric properties

A principal components analysis with Varimax rotation reveals the presence of nine factors with eigenvalues > 1 (threat, challenge, emotion-focused coping, problem-focused coping, self-efficacy, usefulness, intimacy, relationship satisfaction, and involvement). The total variance explained is 70%. A principal axis factoring with Promax rotation affirms the presence of the same nine factors. The Appendix indicates that the reliability (Cronbach's α) of each construct exceeds the lower limit of acceptability of 0.7 (Hair, Black, Babin, & Anderson, 2010). Regarding convergent validity, Table 1 provides the average variance extracted (AVE) for each construct, which exceeds the threshold of 0.5 (Hair et al., 2010). The check for discriminant validity compared the square root of the AVE value for each construct (bolded values on the diagonal in Table 1) with all other correlations and confirmed that the diagonal values were greater than the off-diagonal values in the corresponding rows and columns.

4.1.3. Common method bias

The data came from single sources, so the test for common method bias (CMB) involves estimates of three models: M_0 as the null model ($\chi^2_0(990) = 11{,}354.55$; $p < .01$), M_1 as the baseline model with all nine variables ($\chi^2_1(909) = 1545.207$; $p < .01$), and M_2 as the baseline model with an additional latent factor and all the items as indicators meant to capture potential CMB ($\chi^2_2(908) = 1515.622$; $p < .01$) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The chi-square difference between M_1 and M_2 is statistically significant, yet both the nonnormed ($\rho_{12} = 0.003$) and normed ($\Delta_{12} = 0.003$) incremental fit indices indicate that M_2 (single-method factor model) is not a substantial improvement over M_1 (baseline model) (Bentler & Bonett, 1980). The test of differences in the comparative fit indices (CFI) between models ($CFI_1 = 0.939$, $CFI_2 = 0.941$) produces a value of 0.002, lower than the recommended value of 0.01 (Hair et al., 2010). Therefore, according to the single-method factor approach, CMB is not a concern for the validity of the analysis (Podsakoff et al., 2003).

4.1.4. Analysis

The estimate of the conceptual model uses seemingly unrelated regressions (SUR) with a system of six linear equations (Table 2). The SUR method is based on generalized least squares and is more efficient than ordinary least squares regression when regressors differ across a set of jointly estimated linear equations, because it accounts for correlated errors (Zellner, 1962). The significant Breusch-Pagan-Lagrange multiplier test for error independence ($\chi^2(15) = 140.71$, $p < .01$) indicates correlated errors in the six equations, and the R-square for each individual equation is statistically significant at $p < .01$ (Panel A, Table 2). Therefore, using SUR is appropriate (Cameron & Trivedi, 2009).

The dependent and independent variables in each equation are in Panels B, C, and D of Table 2. Each equation controls for the type of e-service to which each participant had been randomly assigned (Facebook or Blackboard), as well as for the participant's age, gender, and involvement with and daily usage of that e-service. In addition, Equations 1 and 2 control for both types of appraisal (i.e., threat and challenge); Equations 3–5 control for both types of coping strategies (i.e., emotion- and problem-focused). This step acknowledges that appraisal and coping do not take place in vacuum; they can occur simultaneously and should be considered separately (Lazarus & Folkman, 1984).

4.1.5. Results

The coefficients and their standard errors, obtained with the SUR estimator (sureg command) in STATA 14, are in Table 2. Customers who appraise the incremental service innovation as a threat use emotion-focused coping (0.39, $p < .01$), in support of H1. Appraising the incremental service innovation as a challenge results in problem-

Table 1
Study 1, descriptive statistics and correlations.

	Min.	Max.	Mean	Std. dev.	AVE	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Threat	1	7	3.71	1.64	0.65	**0.81**												
2. Challenge	1	7	3.06	1.45	0.65	−0.52	**0.80**											
3. Problem-focused coping	1	7	3.27	1.44	0.62	0.24	0.15	**0.79**										
4. Emotion-focused coping	1	6	2.41	1.38	0.71	0.31	0.07	0.47	**0.84**									
5. Self-efficacy	1	7	4.82	1.21	0.61	−0.12	0.21	0.09	−0.07	**0.78**								
6. Usefulness	1	7	3.70	1.63	0.86	−0.15	0.48	0.15	0.09	0.36	**0.93**							
7. Intimacy	1	7	3.87	1.50	0.75	0.00	0.16	0.10	0.16	0.34	0.36	**0.86**						
8. Relationship satisfaction	1	7	3.97	1.36	0.57	−0.33	0.38	0.01	−0.06	0.43	0.37	0.46	**0.76**					
9. Involvement with service	2	7	5.48	0.99	0.59	−0.12	0.22	0.08	0.01	0.29	0.21	0.29	0.44	**0.77**				
10. Type of service (1 = Facebook)	0	1	0.49	0.50	NA	0.38	−0.39	0.02	0.04	0.01	0.23	−0.29	−0.40	−0.33	**NA**			
11. Age (years)	18	28	20.87	1.41	NA	0.02	−0.08	0.05	0.01	0.01	−0.04	−0.03	−0.04	0.01	−0.02	**NA**		
12. Gender (1 = female)	0	1	0.49	0.50	NA	0.21	−0.20	0.14	0.12	0.03	−0.05	0.04	0.00	0.05	0.04	−0.07	**NA**	
13. Daily service usage (hours)	0	6	0.87	0.98	NA	0.24	−0.21	0.07	0.01	0.13	0.28	−0.16	−0.15	0.00	0.54	−0.01	0.10	**NA**

Notes: n = 299. Correlations of at least 0.12 are significant at the 0.05 level (two-tailed). AVE = average variance extracted; NA = not applicable. Numbers in bold on the diagonal indicate the square root of the AVE.

focused coping (0.43, $p < .01$), which supports H2. For the encounter experience (Panel C), customers who employ problem-focused coping express self-efficacy (0.12, $p < .05$) and the usefulness of the new version (0.24, $p < .01$), as predicted in H3 and H4. In a similar vein, customers who employ emotion-focused coping strategies exhibit joy, happiness, and warmth (i.e., intimacy) toward the new version (0.16, $p < .01$), in support of H5. Finally, for the cumulative experience (Panel D), self-efficacy has a positive, significant coefficient (0.29, $p < 01$); intimacy indicates a positive, significant coefficient (0.28, $p < .01$); and usefulness shows a positive but only marginally significant coefficient (0.07, $p < .10$). These results offer good support for H6a and c and marginal support for H6b.

4.2. Study 2: experiment

Study 1 uncovers how participants dealt with the introduction of incremental service innovations retroactively, such that it cannot determine (1) whether the change in the cumulative customer experience is due to the introduction of the new version (because participants only assess the cumulative experience after the innovation introduction) or (2) how customers coped with innovation in e-services in the moment they encountered a new version (because they had to think back to that moment). Study 2 addresses these limitations and complements Study 1 by exposing participants to a fictitious version of a new e-service, using an experimental design.

4.2.1. Participants and procedure

In contrast with Study 1, which relied on student participants, Study 2 includes general customers, recruited through Amazon Mechanical Turk, an established data collection platform for social sciences (Goodman & Paolacci, 2017). The 223 Facebook customers recruited all reside in the United States and have approval ratings above 95%, with an average age of 37.37 years (SD = 11.32), and they are nearly evenly split by gender (47% women). Furthermore, 53% hold at least a bachelor's degree, 54% are not married, and 48% have a total net yearly household income of at least $50,000. All participants had a personal Facebook profile, maintained for 8.85 years on average (SD = 2.90), and 78% visited Facebook at least once per day. They were assigned randomly to either the manipulated (n = 118) or control (n = 105) condition.

The experiment started with an initial measure of all participants' relationship satisfaction with the current version of Facebook. Then participants in both conditions read a brief reminder that Facebook has offered multiple updates over its history, by introducing new versions. On average, participants were familiar with Facebook updates (M = 5.56, SD = 1.12 on a scale of 1 = *Not at all familiar* to 7 = *Very familiar*). Participants in the control condition received no additional information, but those in the manipulated condition read that Facebook had been updated and viewed images of the new version. Similar to the Timeline version in Study 1, the new version introduced in Study 2 maintained common design and features with the previous version but introduced some degree of change in how Facebook looked and what participants could do with it. Unbeknownst to participants, this new Facebook concept was developed by the Australian designer Fred Nerby[2] and was not sanctioned by Facebook. This manipulation thus is neutral: developed by a professional designer, but not an actual new version announced by the service provider. Next, the experiment again measured their Facebook relationship satisfaction, in both conditions (i.e., second measure of relationship satisfaction). Participants in the manipulated condition also had to answer questions about their appraisal of the announced change, the coping strategies they would use to manage it, and the outcomes of their coping for their encounter experience, using the same measures from Study 1.

4.2.2. Realism and manipulation check

On seven-point scales, participants in the manipulated condition scored the new Facebook version as realistic (M = 4.77; SD = 1.61; 1 = *Very unrealistic* to 7 = *Very realistic*). They also assessed the similarity of the new version to the current Facebook version (M = 3.28; SD = 1.64), and one-sample *t*-tests confirmed that the mean was significantly different ($p < .01$) from extreme values (1 = *Very dissimilar* to 7 = *Very similar*) and the midpoint ($p < .05$). That is, participants in the manipulated condition regarded the (fictitious) new version of Facebook as somewhat different from the current version. This manipulation successfully reflects the conceptualization of incremental service innovation as a new version of an e-service that introduces a change noticed by customers.

4.2.3. Results

A mixed, between–within-subject analysis of variance assessed the impact of the introduction of an incremental innovation on participants' relationship satisfaction with Facebook. A significant interaction emerges between time and the experimental condition (Wilks' Lambda = 0.982; F(1,221) = 4.09; $p = .04$; partial eta squared = 0.02). As Fig. 2 illustrates, within participants, there is no statistically significant difference in relationship satisfaction for those in the control condition, but relationship satisfaction decreases for those in the manipulated condition. The results reveal no significant differences in the second measure of relationship satisfaction across participants in the control and manipulated groups (F(1,221) = 2.603;

[2] http://nerby.com/project/facebook/

Table 2
Overview of seemingly unrelated regression (SUR) results.

Panel A: overview of seemingly unrelated regression (SUR) equations

Equation	R^2		χ^2		p	
	Study 1	Study2	Study 1	Study 2	Study 1	Study 2
(1)	0.18	0.37	74.56	126.37	0.00	0.00
(2)	0.18	0.37	67.62	92.82	0.00	0.00
(3)	0.12	0.12	41.86	40.87	0.00	0.00
(4)	0.14	0.38	66.84	129.81	0.00	0.00
(5)	0.19	0.50	73.33	207.05	0.00	0.00
(6)	0.49	0.35	281.78	65.01	0.00	0.00

Panel B: dealing with the change introduced by incremental service innovation

	(1) Problem-focused coping				(2) Emotion-focused coping			
	Study 1		Study2		Study 1		Study2	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Intercept	−1.82	1.28	3.87**	0.96	−0.90	1.23	3.43**	1.00
Threat	0.36**	0.06	0.01	0.08	0.39**	0.05	0.18*	0.09
Challenge	0.43**	0.06	0.57**	0.08	0.34**	0.06	0.53**	0.09
Involvement with service	0.05	0.08	−0.26**	0.09	−0.01	0.08	−0.28**	0.09
Type of service	0.07	0.21	NA	NA	0.05	0.20	NA	NA
Age	0.09†	0.05	−0.02	0.01	0.04	0.05	−0.02	0.01
Gender	0.40*	0.16	0.36	0.24	0.28†	0.15	0.23	0.24
Daily service usage	0.05	0.09	−0.73*	0.35	−0.06	0.09	−0.85*	0.35

Panel C: Consequences for the encounter experience (Related to the incremental e-service innovation)

	(3) Self-efficacy				(4) Usefulness				(5) Intimacy			
	Study 1		Study2		Study 1		Study2		Study 1		Study 2	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Intercept	2.52*	1.07	3.16**	0.98	2.36†	1.42	0.84	1.07	1.67	1.27	−0.96	0.98
Emotion-focused coping	−0.12*	0.05	−0.00	0.10	0.07	0.07	0.02	0.11	0.16*	0.06	0.38**	0.10
Problem-focused coping	0.12*	0.05	0.44**	0.10	0.24**	0.07	0.82**	0.11	0.04	0.06	0.70**	0.10
Involvement with service	0.36**	0.07	−0.02	0.10	0.35**	0.10	−0.11	0.11	0.44**	0.09	−0.06	0.10
Type of service	0.15	0.17	NA	NA	−0.60**	0.22	NA	NA	0.69**	0.20	NA	NA
Age	0.00	0.05	0.01	0.01	−0.05	0.06	0.00	0.01	−0.05	0.06	0.01	0.01
Gender	0.00	0.13	−0.41	0.25	0.00	0.18	−0.29	0.27	−0.34*	0.16	−0.49*	0.25
Daily service usage	0.11	0.08	0.03	0.37	−0.12	0.11	0.28	0.41	0.26**	0.10	0.50	0.38

Panel D: consequences for the cumulative experience (Related to the e-service)

	(6) Relationship satisfaction			
	Study 1		Study2	
	Coef.	Std. err.	Coef.	Std. err.
Intercept	1.26	0.93	−4.40	0.73
Self-efficacy	0.29**	0.05	0.20*	0.10
Usefulness	0.07†	0.04	0.13	0.11
Intimacy	0.28**	0.05	0.18†	0.10
Involvement with service	0.21**	0.07	0.35**	0.08
Type of service	−0.96**	0.15	NA	NA
Age	−0.03	0.04	0.02*	0.01
Gender	0.03	0.11	−0.39*	0.20
Daily service usage	−0.10	0.07	0.10	0.29

Notes: Study 1: n = 299. Breusch-Pagan test of independence: $\chi^2(15) = 165.36$, $p < .01$. Study 2: n = 118. Breusch-Pagan test of independence: $\chi^2(15) = 235.98$, $p < .01$. In Study 2, the outcome variable in Equation 6 is the difference in relationship satisfaction, computed as the average relationship satisfaction after minus before participants in the manipulated condition were exposed to the new version. Coef. = SUR coefficient; Std. err. = standard error. NA = not applicable. Numbers in parentheses before each dependent variable refer to the equations in Panel A.

† $p < .1$

* $p < .05$.

** $p < .01$.

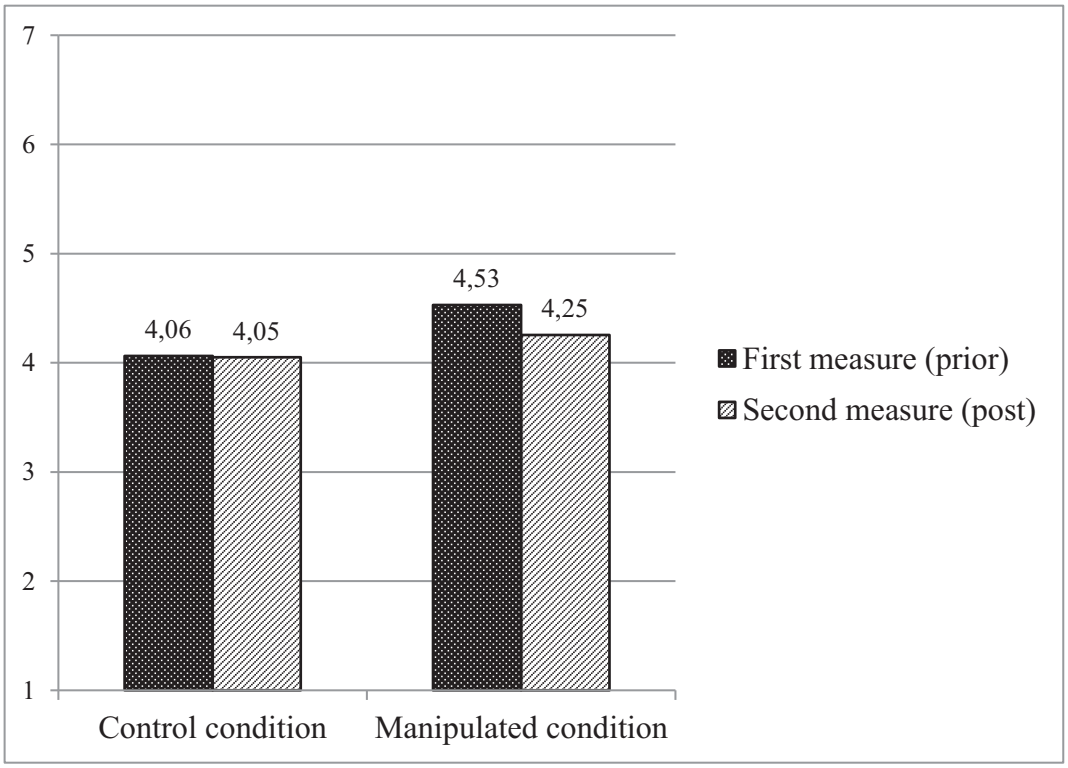

Fig. 2. Study 2, within-subject results.
Notes: n = 223 (105 participants in control condition; 118 participants in manipulated condition). Participants in the control condition were not exposed to a new Facebook version, and those in the manipulated condition were. Interaction between time and experimental condition: Wilks' Lambda = 0.982; F(1,221) = 4.09; p = .04; partial eta squared = 0.02.

p = .11). Thus, the introduction of the new version changed the cumulative customer experience.

To test whether customers employ coping strategies in the moment they confront a new version, and to corroborate our previous results, we estimated the conceptual model with the system of six equations from Study 1 for participants in the manipulated condition (n = 118). As a final dependent variable, we included the difference in relationship satisfaction, between the second and first measurements, reflecting our experimental focus on changes in the cumulative experience. This analysis confirms the previous support for most of the hypotheses (H1–H6a), in both direction and significance (Table 2). However, in Study 2, the difference in relationship satisfaction indicates the impact of intimacy (H6c) is marginally significant (p = .07), and the impact of usefulness (H6b) is not significant (p = .24).

5. Discussion

This article reports on two complementary studies pertaining to how customers deal with incremental service innovation in e-services. Study 1 leveraged the real-life introductions of new versions of existing e-services; Study 2 exposed participants to a fictitious new version, in real time. Study 2 replicates the results of Study 1 and complements those findings by revealing that the introduction of an incremental service innovation is a critical encounter that affects the cumulative customer experience.

When faced with new versions of e-services, customers might perceive the change as a loss to be avoided or a gain to be pursued. They manage the appraised change by employing emotion- and problem-focused coping strategies (Duhachek, 2008). Although not hypothesized, in Study 1 we find a positive impact of threat appraisal on problem-focused coping. When surveyed, the respondents in that study already were using the new versions of the e-services. Hence, it seems that when reflecting with some temporal distance about a past e-service innovation, respondents recall employing both coping strategies, hinting at potential sequential effects. Furthermore, both studies indicate that when an e-service innovation is introduced, customers employ emotion-focused coping even if they appraise the change as a challenge. Given that the scale of emotion-focused coping is neutrally formulated, differences in employing this strategy in content and audience for both appraisals would be informative.

Due to the contextual nature of appraisal and coping research (i.e., studies predominantly examining how customers deal with different types of negative events) there is still no consensus about how different types of appraisal affect the various coping strategies (Duhachek et al., 2012). Our conclusion is that in the context of e-services, where (1) the introduction of incremental e-service innovation is not an inherently negative event and (2) customers want to continue using the e-service that has undergone the change, both types of appraisal can positively impact both types of coping. Service innovation research would benefit from a finer-grained understanding of how the impact of appraisal on coping strategies is influenced by e-service innovation characteristics.[3]

[3] We thank one of the anonymous reviewers for the suggestion to further explore this. We conducted an additional 2 × 2 scenario-based experiment in which we manipulated the consistency of a new Facebook version compared to the previous Facebook version in terms of *display consistency* (how similar or different the new version looks compared to the previous version) and *functional consistency* (how similar or different the new version is in terms of features compared to the previous version). Based on a sample of 166 Facebook users (48% female, average age of 21.06 years, SD = 1.57), our results show that display consistency does not play a statistically significant role. However, functional consistency moderates the impact of both threat appraisal on emotion-focused coping and challenge appraisal on problem-focused coping. Specifically, when the new version of an e-service is not like the previous version in terms of features (i.e., no functional consistency) customers who apprise it as more threatening will use more emotion-focused coping. However,

Our results also show that coping strategies in turn influence customer experiences in different ways. In Study 1, employing action-oriented efforts positively influenced participants' perceived ability to use the service innovation, as well as how useful they found it. In Study 2, employing problem-focused coping also influenced intimacy with the incremental service innovation. We attribute this not-hypothesized result to the visual nature of the manipulation; to capture how customers cope with incremental innovation in real-time, in Study 2 we had to expose participants to a realistic-looking new version of the e-service which introduced a degree of change from the current version in terms of both design and features. Thus, being faced with novel visual material as in Study 2 may have been more emotionally stimulating and might have ignited an effective response.

Employing emotion-oriented efforts instead might improve customers' connectedness with the service innovation, even if it reduces perceptions of their ability to use the service innovation. Customers trying to regulate emotions related to the introduction of an innovation thus might achieve positive affective encounter experiences but negative cognitive ones. These results resonate with prior coping literature that notes the impossibility of determining what constitutes good or bad coping a priori, because coping relates to customers' efforts to manage the change, irrespective of their success (Lazarus & Folkman, 1984).

Finally, the cognitive (i.e., self-efficacy) and affective (i.e., intimacy) dimensions of the encounter experience can have positive consequences for the cumulative experience, measured statically (Study 1) or dynamically (Study 2). Usefulness, though established as a key driver of new technology acceptance (Venkatesh & Davis, 2000), does not seem to have an equally important role in determining the cumulative experience after the introduction of an incremental e-service innovation. This result reflects findings from information systems research (e.g., Kim & Malhotra, 2005) that suggest usefulness is better suited to explain an information system's acceptance (pre-adoption) than its continuance (post-adoption).

5.1. Academic implications

This research contributes to service innovation and customer experience literature in three principal ways. First, we conceptualize the introduction of incremental e-service innovation as a critical service encounter that can influence the cumulative customer experience. In doing so, we address calls for research to determine moments of truth in the customer journey (Lemon & Verhoef, 2016; Voorhees et al., 2017). This conceptualization is especially relevant for e-services, for which customers undergo frequent interactions with a digital service interface rather than with employees (Larivière et al., 2017). Their customer experiences also are both narrower and more immediate because of the absence of direct sales (Morgan-Thomas & Veloutsou, 2013). Service providers induce change by introducing new versions of e-services, with the aim of improving the customer experience (Barrett et al., 2015). Customers do not initiate these interactions, nor do they necessarily seek them, but they must interact with each new version if they want to continue using the services. The dilemma for service providers is that they must innovate to survive, but their innovation efforts could alienate customers.

Second, we provide a new perspective on how customers deal with changes due to incremental service innovation through a conceptual model based on appraisal and coping theory (Lazarus & Folkman, 1984). Consequently, we address a research priority related to identifying how service innovation affects customers' experience (Bolton et al., 2018). In bridging service innovation (Snyder et al., 2016) and customer experience (Hoffman & Novak, 2017) literature, we (1) suggest that appraisal and coping are the mechanisms customers use to determine the extent to which incremental service innovation is a critical encounter and (2) show how the use of coping strategies that draw on different resources can influence the different dimensions of the experience. In turn, we enrich the developing field on how appraisal and coping affect consumption-related, rather than well-being–related, outcomes (Duhachek, 2008). Extant research in this field has focused predominantly on customer appraisal and coping with negative service encounters (e.g., Duhachek et al., 2012; Han et al., 2016). Instead, we conceptualize the introduction of incremental service innovation not as an inherently negative event but rather as a service encounter that can affect the customer experience positively or negatively.

Third, we investigate an e-service already being used by customers and contribute to research on post-adoption behaviors from a customer perspective (Fleischmann et al., 2016). Employees in organizations have been the focus of most continuance research, but their usage of e-services largely is dictated by formal relationships (Ayyagari et al., 2011), whereas customers have more options to reduce their usage or switch to competitors. Service providers introduce innovations in e-services to enhance the customer experience, but existing customers do not necessarily evaluate the resulting change as a gain; they even might see it as a loss. Irrespective of the context-specific appraisal, customers employ coping strategies to manage the change, because they already are part of an existing customer base.

5.2. Managerial implications

To support customers' continued use of e-services, it is not enough for service providers to introduce innovations. They must aim to maximize customer appraisals of potential gain (or minimize customer appraisals of potential loss) after the new versions have been introduced, and they should facilitate customers' uses of coping strategies. Customers appraise the change predominantly as a threat or as a challenge, and each form of appraisal can invoke different coping strategies. Even if customers regard the new versions negatively, firms still can improve encounter experiences, if they help customers cope. Firms should encourage gain (i.e., challenge) appraisals, to help customers feel more eager about actively pursuing the innovation and maximizing their gains. For example, service providers could offer technology-delivered tutorials with each new version, to explain why the change was necessary and how it is meant to improve the customer experience. This recommendation may seem obvious, but when introducing new versions, most e-service providers focus on technical implementation (e.g., new version is as bug-free as possible) or time-to-market (e.g., launch new features before competitors) (Huang et al., 2017). They generally provide highly technical release notes with new versions (i.e., textual descriptions of what has changed). Instead, to help customers cope with the change, e-service providers could take the example of Google: Each time it introduces a new version of Gmail, this leading e-service provider captures customers' attention by highlighting what has changed and asking customers to acknowledge the changes by clicking a “got it” button. In other words, Google helps its customers directly address and acknowledge the change introduced.

Firms also should seek to inspire customers to employ problem-focused coping and give them chances to interact directly with new versions of e-services, after they have been introduced. If people try the new version, they may be more likely to perceive themselves as able to use it, which should influence their e-service relationship satisfaction. Another leading e-service provider, Dropbox relies on gamification to achieve this outcome, rewarding customers with additional cloud storage space if they employ problem-focused coping (e.g., trying a new version by completing relatively simple usage tasks, such as uploading photographs).

Finally, firms must recognize the potential for a double-edged sword effect when it comes to inspiring customers to use emotion-focused

(*footnote continued*)
when the new version is like the previous version in terms of features (i.e., functional consistency) customers who apprise it as more challenging will use more problem-focused coping.

coping. Doing so might increase customers' joy with the innovation, but it can make them feel as if they are unable to use the innovation effectively. This scenario raises an interesting dilemma, in that both self-efficacy and intimacy can improve the cumulative experience. At a minimum, service providers should offer customers a way to regulate their emotions, as simple as when Facebook introduced the Reactions feature to help customers express a wider set of emotions, from happiness to anger.

5.3. Limitations and further research

Some limitations of this study suggest research opportunities. First, this study takes a cross-sectional perspective on innovation in e-services. Additional research could benefit from a longitudinal perspective that considers the introduction of multiple, distinct innovations (i.e., service encounters) in an existing service and monitors changes in appraisal, coping, and the encounter and cumulative experience. Second, to enrich the conceptual model of how customers deal with innovation in e-services, further research could explore potential boundary conditions, such as those related to the actual content of the innovation (i.e., its design and features) or more stable customer characteristics (e.g., innovativeness, willingness to learn). Third, finer-grained problem-focused and emotion-focused coping strategies have been proposed (e.g., Duhachek, 2005), so future research could investigate their impact on the encounter experience. Fourth, this research includes relationship satisfaction as an embodiment of the cumulative customer experience; other operationalizations of this experience, such as the Net Promoter Score or employing multiple, different measurements (Lemon & Verhoef, 2016), also might be informative. Fifth, it is beyond the scope of this research to account for how customers experience the e-service. Participants in our studies had to refer to desktop computer versions of e-services, so research that investigates the effects of different types of technology (e.g., smartphones, wearables) that customers use for e-service interactions could provide additional insights.

Declaration of Competing Interest

None.

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Appendix. Study 1 constructs, items, and psychometric properties

Construct	Sources	Items	α	Loadings
Appraisal				
Challenge	Adapted from Duhachek and Iacobucci (2005); Peacock and Wong (1990)	Did you feel or think that the new version … (7-point scale: "not at all–very much"):		
		• Would have a positive impact on my experience with the Facebook / Blackboard service.	.91	.67
		• Made me eager to pursue it (take it on).		.87
		• Could make me more confident in my experience with Facebook / Blackboard.		.82
		• Made me excited about its outcome.		.89
		• Made me hopeful.		.76
Threat	Adapted from Duhachek and Iacobucci (2005); Peacock and Wong (1990)	Did you feel or think that the new version … (7-point scale: "not at all–very much"):		
		• Was a threatening situation for me.	.91	.83
		• Made me anxious.		.85
		• Would have a negative outcome for me.		.86
		• Would have a negative impact on my experience with the Facebook / Blackboard service.		.75
		• Made me upset.		.75
Coping strategies				
Problem-focused coping	Adapted from Duhachek (2005); Duhachek and Iacobucci (2005)	Please indicate to what extent you did any of the following to manage the new version (7-point scale: "not at all–very much"):		
		• Concentrated on ways the new version could be solved.	.88	.78
		• Tried to make a plan of action.		.70
		• Generated potential solutions.		.79
		• Thought about the best way to handle the new version.		.74
		• Concentrated my efforts on doing something about the new version.		.83
		• Did what had to be done*.		.45
		• Followed a plan to make things better or more satisfying.		.81
Emotion-focused coping	Adapted from Duhachek (2005); Duhachek and Iacobucci (2005)	Please indicate to what extent you did any of the following to manage the new version (7-point scale: "not at all–very much"):		
		• Took time to express my emotions	.93	.93
		• Let my feelings out somehow.		.83
		• Dug into my feelings to understand them		.81
		• Wanted to take time to figure out what I was feeling		.80
		• Wanted to realize that my feelings were valid and justified.		.78
		• Wanted to acknowledge my emotions		.94
		• Tried to take my mind off the new version by doing other things. *		.59
Encounter experience (Related to the incremental e-service innovation)				

Self-efficacy	Adapted from Van Beuningen et al. (2011)	(7-point scale: "not at all–very much").		
		• I believe it was possible for me to use the new version of Facebook / Blackboard at the level I liked.	.89	.68
		• I could master online socializing / learning via the new version of Facebook / Blackboard.		.82
		• I believe I could socialize / learn online via the new version of Facebook / Blackboard as well as I liked.		.82
		• I am certain I could socialize / learn online via the new version of Facebook / Blackboard well.		.85
		• I think my performance in online socializing / learning via the new version of Facebook / Blackboard was optimal.		.71
Intimacy	Adapted from Yim et al. (2008)	(7-point scale: "not at all–very much")		
		• I always enjoy my experience on the new version of Facebook / Blackboard.	.91	.89
		• I always have a warm and comfortable feeling when visiting the new version of Facebook / Blackboard.		.84
		• I experience great happiness with visiting the new version of Facebook / Blackboard.		.89
Usefulness	Adapted from Venkatesh and Davis (2000)	Compared to the old version … (7-point scale: "not at all–very much"):		
		• Using the new version of Facebook / Blackboard has improved my online socializing / learning performance.	.97	.96
		• Using the new version of Facebook / Blackboard has increased my online socializing / learning productivity.		.97
		• Using the new version of Facebook / Blackboard platform has enhanced my online socializing / learning effectiveness.		.91
		• The new version of Facebook / Blackboard has been beneficial for my online socializing / learning activities.		.86
Cumulative experience (Related to the e-service)				
Relationship satisfaction	Adapted from DeWulf et al. (2001)	(7-point scale: "not at all – very much")		
		• I have a high-quality relationship with Facebook / Blackboard.	.83	.65
		• I am happy with the efforts Facebook / Blackboard is making towards users like me.		.84
		• I am satisfied with Facebook / Blackboard.		.71
Control				
Involvement	Adapted from Zaichkowsky (1985)	At the moment, you consider the Facebook / Blackboard service (7-point semantic differential):		
		• Needed/not needed	.92	.83
		• Essential/non-essential		.75
		• Important/unimportant		.84
		• Of concern/of no concern		.69
		• Matters to me/does not matter		.66
		• Relevant/irrelevant		.83
		• Valuable/worthless		.66
		• Significant/insignificant		.82

Notes: n = 299; The reported factor loadings are based on principal axis factoring with Promax rotation.

* Items excluded from the analysis due to poor factor loadings.

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